

### Abstract

2           A calibration technique is presented for calibrating one or more non-  
reference indirect measurement systems with respect to a reference indirect  
4 measurement system. A reference map function fitting procedure fits a  
reference map function based on known values of a parameter of interest  
6 associated with each of one or more reference calibration samples and  
corresponding reference values associated with the one or more reference  
8 calibration samples measured on or simulated for the reference indirect  
measurement system. A correction function fitting procedure fits a correction  
10 function based on reference values for one or more calibration samples  
measured on or simulated for the reference indirect measurement system  
12 and corresponding values measured on the non-reference indirect  
measurement system. During normal use, the non-reference indirect  
14 measurement system obtains measurements that are indirectly  
representative of a parameter of interest of an object, corrects the raw  
16 measurements using the correction function to corresponding corrected  
measurements in order to minimize measurement differences between the  
18 indirect measurement system and the reference indirect measurement  
system, and estimates the parameter of interest of the object using the  
20 reference map function based on the corrected measurement. Reference  
map function fitting is typically performed only once, while correction function  
22 fitting is updated periodically and independently of the reference map  
function fitting to account for drift due to systemic, environmental, or other  
24 variations.